

INTELLIGENT CARD

BACKGROUND OF THE INVENTION

The present invention relates to an intelligent card which can identify the authenticity of its holder.

In so-called cash and credit cards, embossed characters and a magnetic recording coating are formed on the surface of a plastic plate. However, since these conventional cards have a poor identification capability for determining whether or not a user is valid, they can be used by people other than the authorized card holders. For this reason, a card (i.e., an IC card) having a higher identification capability has been developed and used in practice. An IC chip is embedded in the IC card to effectively prevent people other than the authorized card holder from using the card or counterfeiting it. A connecting terminal is arranged on the surface or edge of the IC card. When the IC card is set in a terminal device installed at, for example, a bank, the IC chip in the IC card is electrically connected to the terminal device through the connecting terminal. The IC chip is energized from the terminal device through the connecting terminal, and an identification number is entered at the keyboard in the terminal device. The identification number prestored in the IC chip is read out and compared with the entered identification number in the terminal device so as to determine whether or not the current card user corresponds to the authorized card holder.

However, in a conventional IC card, the IC chip is simply embedded in the card body, so that the terminal device must be used to identify the card user. Terminal device costs are relatively high and impose a load on a retail store with a relatively small capital. In addition to this disadvantage, the card holder must enter the identification number in the presence of a store clerk, so that secrecy of the identification number cannot be guaranteed.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an intelligent card which can identify a card holder and can prevent use of the card by people other than the authorized card holder and prevent counterfeiting of the card.

According to the present invention, there is provided an intelligent card comprising: input means for entering identification information; first memory means for storing the identification information entered by the input means; second memory means for storing predetermined identification information; means for performing a collation of the identification information stored in the first and second memory means; and means for generating a signal representing a collation result generated from the collation performing means.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1A and 1B are perspective views showing the upper and lower surfaces of an intelligent card according to a first embodiment of the present invention, respectively;

FIG. 2 is a block diagram of a circuit of the intelligent card shown in FIGS. 1A and 1B;

FIG. 3 is a diagram showing the function blocks of the circuit of FIG. 2;

FIG. 4 is a flow chart for explaining the operation associated with the user;

FIG. 5 is a flow chart for explaining the operation of the intelligent card;

FIG. 6 is a flow chart for explaining the operation according to a second embodiment of the present invention;

FIG. 7 is a perspective view showing the outer appearance of an intelligent card according to a third embodiment of the present invention;

FIG. 8 is a block diagram of the circuit of the intelligent card shown in FIG. 7;

FIG. 9 is a perspective view of an intelligent card according to a fourth embodiment of the present invention;

FIG. 10 is a block diagram of a circuit of the intelligent card of FIG. 9;

FIG. 11 is a perspective view showing the outer appearance of an intelligent card according to a fifth embodiment of the present invention;

FIGS. 12 and 13 are respectively flow charts for explaining the operation of the intelligent card of FIG. 11;

FIG. 14 is a perspective view showing the outer appearance of an intelligent card according to a sixth embodiment of the present invention;

FIG. 15 is a block diagram showing the main part of the intelligent card of FIG. 14;

FIGS. 16 and 17 are respectively flow charts for explaining the operation of the intelligent card shown in FIGS. 14 and 15;

FIGS. 18A to 18C are respectively perspective views showing an intelligent card according to a seventh embodiment of the present invention;

FIG. 19 is a block diagram of the circuit of the intelligent card shown in FIGS. 18A to 18C;

FIGS. 20 and 21 are respectively flow charts for explaining the operation of the intelligent card of FIGS. 18A to 18C;

FIG. 22 is a perspective view showing the outer appearance of an intelligent card according to an eighth embodiment of the present invention;

FIGS. 23 and 24 are sectional views of the intelligent card taken along the lines A—A and B—B of FIG. 22, respectively;

FIGS. 25A to 25H are respectively exploded perspective views showing the internal structure of the intelligent card of FIG. 22;

FIG. 26 is a sectional view of a battery shown in FIG. 25E; and

FIG. 27 is a block diagram of the circuit of the intelligent card shown in FIG. 22.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1A and 1B are respectively perspective views showing the upper and lower surfaces of an intelligent card which adapts the present invention. Reference numeral 10 denotes a card body. Characters are embossed in an uppermost sheet 11 to represent an identification code 11A, a card holder name 11B and the like. A receipt can be issued by an emboss-in-printer or the like after the card as shown in FIG. 1A is set in the printer.

A keyboard 12, an LC (liquid crystal) display device 13 and a solar cell 40 are mounted on a lowermost sheet 20, and an LSI (to be described later) is incorporated in